

This listing of claims will replace all prior versions of claims in this application:

Listing of Claims:

1. **(Unamended)** A method for wire bonding a finger sensor die to an external circuit, wherein the finger sensor die includes a sensor array having one or more die contacts that are wire bonded to one or more external contacts of the external circuit so that a usable portion of the sensor array is maximized, the method comprises steps of:

forming a ball at a first end of a bonding wire;

forming an electrically conductive connection between the ball and a selected external contact of the external circuit;

extending the bonding wire to a selected die contact so as to form a wire loop having a low loop height;

forming an electrically conductive stitch connection between a second end of the bonding wire and the selected die contact; and

repeating the above steps until the one or more die contacts are wire bonded to the one or more external contacts of the external circuit.

2. **(New)** The method of claim 1, wherein the step of extending is a step of extending the bonding wire to the selected die contact so as to form a wire loop having a low loop height that is substantially in the range of 1 to 2 mils.

3. **(New)** The method of claim 2, further comprising a step of encapsulating the bonding wires with an encapsulation material that forms a cavity around at least a portion of the sensor array, wherein the cavity has a cavity wall having a height (H) above the sensor array and wherein an inaccessible portion of the sensor array is substantially equivalent to a region defined by $(3.2 \times H)$.

4. **(New)** The method of claim 2, further comprising a step of encapsulating the bonding wires with an encapsulation material that forms a cavity around at least a portion of the sensor array, wherein the cavity has a cavity wall having a height (H) above the sensor array and wherein an inaccessible portion of the sensor array is substantially equivalent to a region defined by $(1.8 \times H)$.

5. (New) The method of claim 3, wherein the step of encapsulating comprises a step of forming the cavity wall to be perpendicular to the sensor array.

6. (New) The method of claim 3, wherein the step of encapsulating comprises a step of forming the cavity wall to be sloped.

7. (New) The method of claim 3, wherein the step of encapsulating comprises a step of forming the cavity wall to be stepped.

8. (New) The method of claim 3, wherein the step of encapsulating comprises a step of forming the cavity wall to be chamfered.

9. (New) The method of claim 3, wherein the value of H is substantially in the range of 1 to 2 mils.

10. (New) A method for wire bonding a finger sensor die to an external circuit, wherein the finger sensor die includes a top surface that includes a sensor array having one or more die contacts that are to be wire bonded to one or more external contacts of the external circuit, the method comprises steps of:

forming an electrically conductive connection between a first end of a bonding wire and a selected external contact;

extending the bonding wire to a selected die contact so as to form a wire loop that extends above the top surface by an amount substantially equal to 1.5 mils;

forming an electrically conductive connection between a second end of the bonding wire and the selected die contact; and

repeating the above steps until the one or more die contacts are electrically coupled to the one or more external contacts of the external circuit.

11. (New) The method of claim 10, wherein the fingerprint sensor is a stationary-type fingerprint sensor and the method further comprises a step of encapsulating the bonding wires with an encapsulation material that forms a cavity around at least two sides of the sensor array, wherein the cavity has cavity walls having a height (H) above the sensor array and wherein an inaccessible portion of the sensor array is substantially equivalent to a region defined by $(1.8 \times H)$.

12. (New) The method of claim 11, wherein the step of encapsulating comprises a step of forming the cavity wall to be perpendicular to the sensor array.

13. (New) The method of claim 11, wherein the step of encapsulating comprises a step of forming the cavity wall to be sloped.

14. (New) The method of claim 11, wherein the step of encapsulating comprises a step of forming the cavity wall to be stepped.

15. (New) The method of claim 11, wherein the step of encapsulating comprises a step of forming the cavity wall to be chamfered.

16. (New) The method of claim 11, wherein the value of H is substantially in the range of 1 to 2 mils.

17. (New) The method of claim 10, wherein the fingerprint sensor is a sweep-type fingerprint sensor and the method further comprises a step of encapsulating the bonding wires with an encapsulation material that forms a cavity around at least a portion of the sensor array, wherein the cavity has a cavity wall having a height (H) above the sensor array and wherein an inaccessible portion of the sensor array is substantially equivalent to a region defined by $(3.2 \times H)$.

18. (New) The method of claim 17, wherein the step of encapsulating comprises a step of forming the cavity wall to be perpendicular to the sensor array.

19. (New) The method of claim 17, wherein the step of encapsulating comprises a step of forming the cavity wall to be sloped.

20. (New) The method of claim 17, wherein the step of encapsulating comprises a step of forming the cavity wall to be stepped.

21. (New) The method of claim 17, wherein the step of encapsulating comprises a step of forming the cavity wall to be chamfered.

22. (New) The method of claim 17, wherein the value of H is substantially in the range of 1 to 2 mils.

23. (New) A method for wire bonding a finger sensor die to an external circuit, wherein the finger sensor die includes a sensor array having one or more die contacts that are wire bonded to one or more external contacts of the external circuit so that a usable portion of the sensor array is maximized, the method comprises steps of:

locating the finger sensor die having die contacts on a surface of the finger sensor die to the external circuit having external contacts on a surface of the external circuit, such that the surface of the finger sensor die is located to a position higher than the surface of the external circuit;

forming an electrically conductive connection between a bonding wire and a selected external contact of the external circuit;

extending the bonding wire from the selected external contact of the external circuit away from the surface of the external contact of the external circuit;

making a low loop height wire loop of the bonding wire by extending the bonding wire toward a selected die contact on the surface of the finger sensor die; and

forming an electrically conductive stitch connection between a second end of the bonding wire and the selected die contact.